Grand Teton National Park

Science and Resource Management

2011 Wildlife Conservation: Pathway Use

BACKGROUND

In spring 2007, Grand Teton National Park issued a transportation plan/environmental impact statement which authorized the construction of a paved, multi-use pathway within the park. The building of the Phase 1 pathway (7.7 miles from Dornan's in Moose to Jenny Lake developed area) was initiated in spring 2008, and this section opened for use on 16 May 2009.

The presence of a multi-use pathway within the park raised questions about the impacts of pathway users on wildlife communities. Numerous projects monitoring the effects of the pathway on wildlife species were implemented prior to the pathway opening and continued through 2010. To document the number and types of pathway users and the pattern of pathway use, we set up a system of counters and infra-red remote cameras along the Phase 1 pathway section. We collected data on pathway use in 2009, 2010, and 2011.

APPROACH

We installed 6 counters and 2 cameras along the 7.7 mile, Phase 1 section of the multi-use pathway (Fig. 1). We placed counters between popular parking areas to capture the majority of pathway users. The two cameras were positioned near counters to estimate proportion of user groups (e.g., bikers, hikers, etc.) on the pathway. Counters were programmed to record every passer-by and to batch the number of users in hour-long periods. The infra-red cameras were triggered when an object moved in front of its range along the pathway. The counters and cameras were in operation in 2011 from 13 May through 11 November.

Western Transportation Institute (WTI) surveyed pathway use with ground personnel positioned adjacent to pathway counters over a 3-day period in August 2009 to check the accuracy of our counters. WTI compared their ground survey numbers and types of users with our counter and camera data for the days they conducted surveys in the park.

RESULTS

The number of pathway uses detected averaged 18,843 per counter for the 2011 season (Table 1). The monthly average of uses per counter ranged from a high of 6,290 in July to a low of 48 in November (Fig. 2). The average daily number of uses per counter was 104 in 2011 compared to 100 in 2009 and 109 in 2010 (Fig. 3). Counter 3 recorded the highest amount of use throughout the season with an average of 143 counts per day, while counter 6 averaged the lowest number of use with 78 per day. It is important to note that pathway counts or uses are not equivalent to pathway users, since the same user may be tallied multiple times depending on his/her route.

The hourly distribution of pathway use was fairly uniform with numbers increasing from 6 to 11 AM, decreasing from 3 to 8 PM, and peaks of use occurring between 11 AM and 3 PM. The pathway was closed between dusk and dawn.

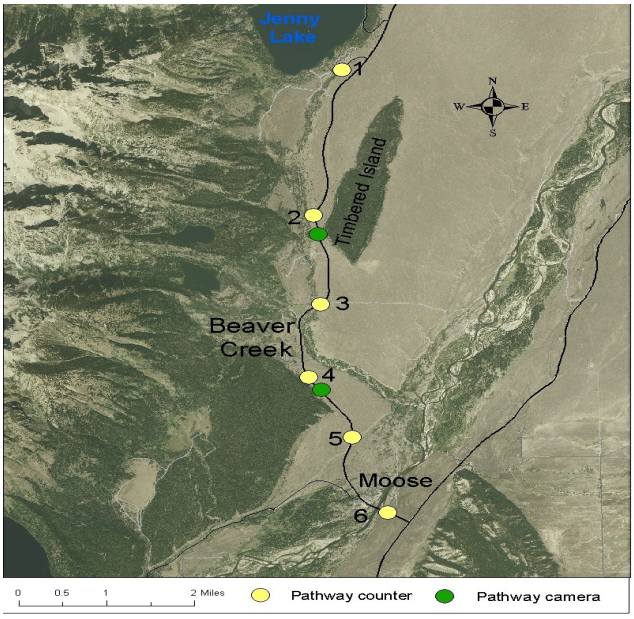

Figure 1. Location of pathway counters and cameras.

Table 1. Summary of count data[1] logged at 6 pathway counters, 14 May to 11 November, 2011, Grand Teton National Park.

Counter #	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	Counts/day (range, SD)
1	199	3,361	6,895	6,202	2,864	744	35	20,300	113 (0-347, 98)
2	218	3,121	6,649	5,804	2,717	770	42	19,321	107 (0-376, 96)
3	569	4,966	8,790	7,581	3,233	714	67	25,920	143 (0-484, 124)
4	460	2,802	4,672	4,619	2,508	868	54	15,983	88 (0-261, 67)
5	473	2,827	5,967	4,944	2,264	809	80	17,364	96 (0-326, 81)
6	363	2,133	4,767	4,580	2,080	239	9	14,171	78 (0-305, 71)
Average	380	3,202	6,290	5,622	2,611	691	48	18,843	104

[1]Detections logged by pathway counters, which can include multiple counts for the same individual (e.g., travel in different directions).

In 2009, WTI found the automated counters and cameras to underestimate use by 39% and 32%, respectively. Possible explanations for these discrepancies are that multiple users traveling side by side would only be recorded once by counters and/or our cameras failed to detect some cyclists traveling at high speeds.

The 2 remote cameras recorded over 40,000 images with users including walkers, runners, roller bladers, and bicyclers. WTI hand counts found 97% bicyclers, 2% pedestrians, and 1% roller bladers while cameras recorded 96% bicyclers, 3% pedestrians, and 1% roller blade users (WTI, unpublished data.

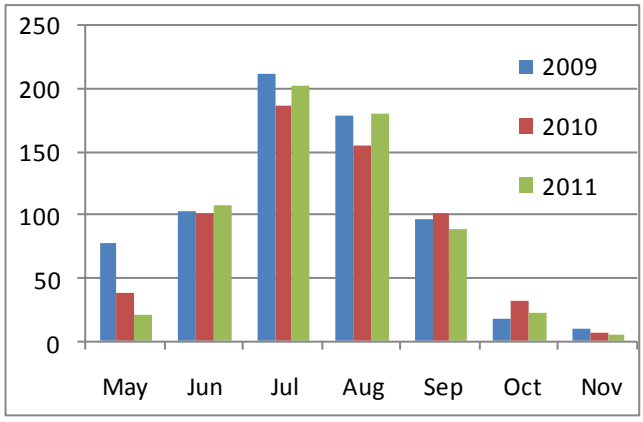

Figure 2. Average number of daily detections among 6 pathway counters by month, 2009-2011.

2012 RESEARCH

Monitoring of pathway use will continue in 2012 for the section between Moose and Jenny Lake starting in May and ending in November, corresponding with the snow-free period. A new segment of pathway was constructed between the Gros Ventre River and Moose in summer 2011.

ACKNOWLEDGMENTS

P. McGowen and WTI personnel conducted hand counts on the ground to check the accuracy of the counters.

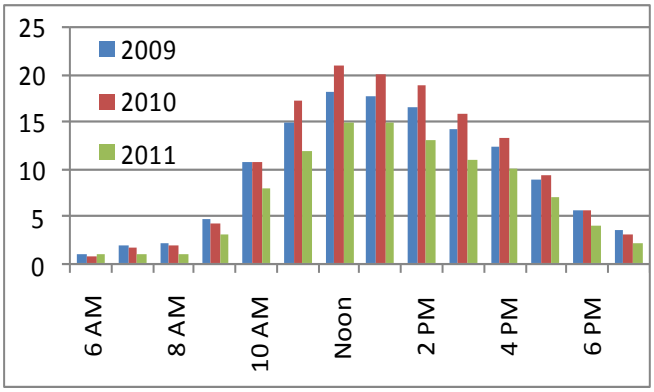

Figure 3. Average number of pathway use detections per hour, 2009-2011.

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